

CD4 Count At The Time of HIV Diagnosis – A Cross Sectional Study Among Newly Diagnosed HIV Patients Presenting To A Tertiary Care Hospital In South India.

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ABSTRACT

Background: Early diagnosis and entry into the HIV care system are essential for the PLHA patients because if diagnosed at late stages they not only miss the benefits of earlier ART treatment but also are more likely to remain chronically viremic and transmit the virus to their sexual partners. **Aim:** This study was designed to evaluate the socio-demographic factors and concurrent immunological status of newly diagnosed HIV patients. **Methods:** This cross-sectional observational study was conducted at a tertiary care hospital in South India. Hundred newly diagnosed HIV patients were selected for the study. Demographic and clinical data along with relevant laboratory investigations of the patients were recorded and analysed. **Results:** 65% of patients were in age group of the fourth and fifth decade. Females constituted 59% of study population. 27% patients were illiterate and 40% had primary school level of education. The predominant mode of transmission for males and females was unprotected sexual intercourse. 41% of patients were in sero concordance with their spouse, whereas 18% patients were not aware of their spouse status. 44% of patients are eligible for initiation of first line anti-retroviral therapy in accordance with their CD4 count (<350) at the time of diagnosis. **Conclusion:** Our study shows that lower educational level and unsafe sexual practices are major risk factors for the acquisition of HIV in India. Almost half of first-time testers qualify the criteria for immediate initiation of ART. Our finding reinforces the need to establish universal routine HIV testing as the standard of care for adolescents and adults that will reduce the late stage or illness triggered HIV diagnosis.

Keywords: Human immune deficiency virus – CD4 count.

INTRODUCTION

HIV infection encompasses a spectrum of clinical features ranging from an acute syndrome with primary infection via a prolonged asymptomatic state to advanced disease. HIV-related illnesses account for many hospitalizations when patients are first diagnosed with HIV which could have been prevented if patients were diagnosed early and linked to medical care. India bears a large burden of newly infected patients in a single country and has the third largest HIV epidemic in the world.^[1] The National AIDS Control Organization fact sheet of 2012 reported an annual death rate of 7.2% among all HIV patients.^[2] The current prevalence of HIV in India was estimated to be 0.26% in 2015.^[3] This figure is small compared to most other middle-income countries, but because of India's huge populations, this equals to 2.1 million people living with HIV. An estimated 86,000 new HIV infection occurs and 68,000 people died from AIDS-related illness. Overall India's HIV epidemic is slowing down with a 32% decline in new HIV infection and

a 54% decline in AIDS-related death between 2007 and 2015. The current programme NACP IV (2012 – 2017) aims to reduce annual new HIV infection by 50% through the provision of comprehensive HIV treatment, education and targeted intervention of key affected groups and those at high risk of HIV transmission.^[4] In this scenario, the present study was designed to analyse the socio demographic parameters and immunological status of newly diagnosed HIV patients to enable us to understand the factors that influence the early diagnosis and early linkage to HIV care.

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Aim

To evaluate the socio-demographic factors and concurrent immunological status of newly diagnosed HIV patients.

MATERIALS AND METHODS

This cross-sectional observational study was conducted at Department of Dermato Venereopatology, Thanjavur Medical College. The institutional ethical committee clearance was obtained. Individuals with a serologically proved diagnosis of HIV infection which promoted the current hospital attendance were considered newly diagnosed HIV patients. The patients were interviewed using a predesigned questionnaire cum case record form where the socio-demographic parameters with age, gender, level of education, marital status, sexual orientation, spouse HIV status, offspring HIV status and the reason for referral for HIV testing were noted. To ascertain the possible modes of transmission sexual exposure history, prior intravenous drug abuse, and blood transfusion and surgical procedure history were taken. Patients in whom possible mode of transmission could not be elicited were designated as unknown. CD4 cell count was recorded to evaluate the immunologic status of the patient. Individual patient wise information and records were transferred to a pre-designed Microsoft office excel work sheet and the results were analysed.

RESULTS

Hundred newly diagnosed HIV patients were included in this study. 65% of patients were in the age group of 30 – 50 years. 17% patients were in their third decade whereas 18% of patients were in the age groups more than 50 years. Females outnumbered males and composed 59% of study population. Marital status analysis showed that all the females in this study group were married whereas 36 among 41 male patients were married. The sexual preference of the patients was heterosexual except one male patient who had homosexual contact. Among the married patients, spouses expired for 37% of patients in whom HIV-related illnesses were the cause of death in 23% of patients and the rest died due to unrelated causes. Educational status analysis revealed 27% of patients were illiterate and 40% had primary school level of education. 24% has completed their high school studies and 9% patients were graduates. Table 1 analyses the possible modes of transmission of HIV in relation to risk exposure. The predominant mode of transmission for both male and female patients was unprotected sexual intercourse. Further analysis revealed that 17% males and 4% females had unprotected extramarital contact .3% males and 25% females contracted the infection from their reactive spouses. Exposure to blood transfusion was present in 22% patients and in another 22% patients, the possible mode of transmission could not be ascertained. 95% patients were married and 41% of them had sero reactive spouse and 18% patients

were not aware of their spouse status due to nondisclosure. 36% of the patients had non-reactive spouses. Two patients had sero reactive children at the time of diagnosis.

Table 1: Possible modes of transmission of HIV.

Possible modes	Male	Female	Total
Spouse	3	25	28
Non-spousal partners	17	4	21
Homo sexual partners	1	-	1
Blood / component transfusion	9	13	22
Shared needles in IV drug abuse	-	-	-
Vertical transmission	-	-	-
Unknown	11	17	28

[Table 2] analyses the various reasons for which the patients were referred to health care system for HIV testing. 56% patients were referred from various departments for complaints like a cough with expectoration, fever, loss of weight and appetite, loose stools, genital lesions, skin and oral lesions. Other referral causes include ANC screening, immigration checkup, screening for partner sake, screening before surgical procedures and blood donation screening through which 44% patients were diagnosed.

Table 2: HIV testing referral pattern.

Reasons for testing	Male	Female	Total
ANC screening	-	8	8
Referral from various departments	26	30	56
Partners screening	7	17	24
Immigration screening	3	1	4
Routine screening before surgery	3	4	7
Blood donation screening	1	-	1

The immunological statuses of the patients were assessed by analysing the CD4 count [Table 3]. 56% of the newly diagnosed PLHA patients were having the CD4 count >350 cells/micro lit. Whereas 23% were in the range 200 – 350 cell/micro lit. 18% patients were having CD4 count between 50 – 200 cell/microliter and 3% patients had CD4 count <50 cell/micro lit. The mean CD4 count of the patients was 438.25cell/microliter. According to current NACO guidelines, 44% patients were eligible for initiation of first line anti-retroviral therapy in accordance with their CD4 count at the time of diagnosis.

Table 3: CD4 count analysis.

CD4 count range	Male	Female	Total
<50	2	1	3
50 – 199	4	14	18
200 – 350	11	12	23
>350	21	35	56

DISCUSSION

This cross-sectional study was conducted in a Tertiary care hospital on 100 ART naive HIV

patients diagnosed at an easily accessible free of charge VCT centre. National Family Health Survey from India reports that only three percent of all Indian women have ever been tested for HIV.^[5] In our study female patients outnumbered males at 3:2 ratio. Studies in United States and Europe have found that male to female HIV transmission is usually more efficient than female to male transmission may be due in part to the prolonged exposure to infected seminal fluid to the vaginal and cervical mucosa as well as the endometrium whereas penis and urethral orifice are exposed relatively briefly to infected vaginal fluid. 27% of our study population were illiterate and 40% had only primary school level of education. Such a low literacy ratio in the affected population definitely have a negative impact at the time of diagnosis as well as understanding the necessity to take lifelong antiretroviral treatment which leads to treatment failure and drug resistance. Analysis of possible modes of transmission showed that unprotected heterosexual intercourse was the predominant mode of transmission (49%). This is low compared to the 2011 – 2012 report of the National AIDS control organization of India where 88.2 percent of HIV-positive persons had the heterosexual route of transmission⁶. In 22% of our study group, the possible route of transmission could not be ascertained which may be responsible for lower sexual transmission ratio. Our study showed 41% sero concordance among married couples. 18% patients were not aware of their spouse status because of reasons like separation and non-disclosure of HIV status to the spouse which indicates the need for more comprehensive and family oriented HIV testing. Two patients had reactive children at the time of diagnosis whereas offspring were not tested in eight patients. Eight female patients were diagnosed during antenatal screening among whom two patients were non-reactive during first-trimester screening. Screening before the marriage could be the best option to prevent this type of transmission, underscoring the need for country wide adoption of more stringent policies to prevent parent to child transmission.

The CD4 count has long been deemed as a marker of cell-mediated immune function. Study on the CD4 counts of newly diagnosed HIV patients in England documented more than 50% of patients having CD4 count less than 350 cell/micro lit⁷. Our data revealed that 44% of patients had CD4 count less than 350 cell/micro lit and eligible for anti-retroviral therapy at diagnosis. 47% of this 44 % patients had CD4 count less than 200 cell/micro lit.

Limitations

Limitations of this study include socio desirability that may have resulted in misclassification of participants as first time testing and being ART

naive. Being a cross-sectional study it does not reflect the dynamic nature of CD4 count.

CONCLUSION

In conclusion, our results show that lower educational levels and unsafe sexual practices are the major risk factor for the acquisition of HIV in India. Almost half of the first time testers in this study qualified for immediate initiation of ART. Prompt HIV diagnosis, early entry into care and timely initiation of combination ART are critical for reducing the risk of both opportunistic and non-opportunistic diseases, prolonging survival and reducing onward HIV transmission. Our findings reinforce the need to establish universal routine HIV testing as the standard of care for all adolescents and adults. Only under such circumstances late stage or illness triggered HIV diagnosis will be reduced and socio demographic disparities in the stage of HIV disease at diagnosis be eliminated.

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